

IN THE SPECIFICATION:

Please amend paragraph number [0014] as follows:

[0014] FIG. 7 is a cross-sectional view of ~~the~~a working tip of ~~the~~a wire bonding capillary of the present invention;

Please amend paragraph number [0015] as follows:

[0015] FIG. 8 is a cross-sectional view of ~~the~~a working tip of ~~the~~a wire bonding capillary of the present invention making a ball type wire bond on a bond pad of a semiconductor device; and

Please amend paragraph number [0016] as follows:

[0016] FIG. 9 is a cross-sectional view of ~~the~~a working tip of ~~the~~a wire bonding capillary of the present invention making a stitch or wedge type bond on a lead finger of a lead frame.

Please amend paragraph number [0017] as follows:

[0017] Referring to drawing FIGS. 1 through 4, a typical wire bonding operation using a capillary is illustrated. A wire 40, typically of gold or copper, is threaded through a hole 20 in the capillary tip 22. The end of wire 40 is heated by an electrical discharge or a hydrogen torch to a molten state, thereby forming a ball 42 of molten metal on the end of wire 40. Capillary tip 22 is lowered toward bond pad 44 on the active surface of a semiconductor device 46. The bond pad 44 is typically of aluminum or has an aluminum layer thereon. However, the bond pad 44 may be of any suitable conductive metal. The semiconductor device 46 is heated to a temperature of 150° C. to 350° C. by a heated block 48. Molten metal ball 42 is pressed by the capillary tip 22 against the ~~heat~~heated bond pad 44 to alloy the metallic elements of the wire 40 and bond pad 44, thereby bonding the wire 40 to the bond pad 44. In some instances, ultrasonic vibrations are applied to the capillary tip 22 as the molten metal ball 42 on the end of wire 40 is pressed against the bond pad 44.

Please amend paragraph number [0021] as follows:

[0021] Referring to drawing FIG. 7, the tip of a wire bonding capillary 80 of the present invention is illustrated. The tip portion of the bonding capillary 80 includes a central aperture 82 having a first frusto-conical surface 84 and second frusto-conical surface 86 extending from the lower end of the first frusto-conical surface 84, both located at or near the lower end of the central aperture 82, and, on the lower surface of the tip, a flat annular surface 88 extending for a distance between diameter “a” to diameter “b” of the tip from the second frusto-conical surface 86 of the central aperture 82 and a face having an annular concave surface 90 extending from the diameter ~~b~~ “b” of the flat annular surface 88 into the tip and outwardly a distance to a point of inflection (tangency) 91 to an annular curved surface 92 defined by a radius “r” of curvature of the tip, which, in turn, intersects at point 94, the lower annular radial diameter “R” of the wire bonding ~~capillary~~ capillary 80, with the annular conical outer surface 96 of the tip. A radius of curvature “RR” is used for the formation of the annular concave surface 90, the size of the radius “RR” determining the degree of curvature of the annular concave surface 90 for the relative clearance between the tip of the wire bonding capillary 80 and a second coating 49 on the surface of the semiconductor device 46. The first frusto-conical surface 84 and second frusto-conical surface 86 of the central aperture 82 and the flat annular surface 88 help to form the required wire bonds to the bond pad 44 and lead finger (not shown) of a lead frame. The flat annular surface 88 of the lower surface of the tip is used to sever the wire 40 during the formation of a stitch or wedge type wire bond on the lead finger (not shown) of a lead frame during the wire bonding process. The width of the flat annular surface 88 is determined by the size of the bond pad 44 of the semiconductor device upon which the wire bonding capillary 80 is to be used.

Please amend paragraph number [0023] as follows:

[0023] Referring to drawing FIG. 9, the wire bonding capillary 80 of the present invention is illustrated in conjunction with a lead finger 50 of a lead frame. The wire 40 is bonded in the bond area 52 of the lead finger 50 by the wire bonding capillary 80 with the flat annular surface 88, annular concave surface 90, and annular curved surface 92 of the tip deforming the wire 40 into engagement with a portion of the lead finger 50. The flat annular surface 88 of the wire bonding capillary 80 is used to sever the wire 40 after the bonding thereof to the lead finger 50. The annular concave surface 90 and annular curved surface 92 of the wire bonding ~~capillary~~ capillary 80 are used in conjunction with the flat annular surface 88 thereof to form the bond area 52 of the connection of the wire 40 to the lead finger 50, the bond area 52 having a convex portion 90' which is formed by annular concave surface 90 of the tip of wire bonding capillary 80 and a curved portion 92' which is formed by the annular curved surface 92 of the tip of wire bonding capillary 80. The flat annular surface 88, annular concave surface 90, and annular curved surface 92 provide a gradual transition between the wedge deformity of the wire 40 and the existing circular shape of the wire 40 extending beyond the bond area 52, the wire 40 being heated by suitable means before the formation of the stitch or wedge type bond on the lead finger 50 while the lead finger 50 is heated before the formation of the wire bond thereto.